In the lists below, "single history file" refers to the size of one snapshot in time of a standard number of 3D and 2D variables output by the model. The number of variables can vary from model to model and run to run. Unless otherwise indicated, it assume the variables for monthly output in a climate-scale simulation (decades to centuries of simulated time.)

Typical number of 3D variables: 10-20
(A simulation with chemistry or biogeochemistry can add dozens to hundreds of 3D tracers)
Typical number of 2D variables: 100 (atmosphere), 10-20 (ocean), 50 (land and sea-ice)

Global Atmosphere Model

CAM Finite Volume 0.5 degree
576x384x26 regular lat-lon grid

```
single 3D variable       23 MB
single history file     859 MB
single restart file   1.925 GB
```

with history output every simulated month:

```
1 year:                10.3 GB
100 years:             1.03 TB
```

CAM HOMME 0.125 degree

```
single 3D variable    616MB (real*8)
single 2D variable     25MB (real*8)
total grid points per 3D variable:  3110402 x 26
single history file    24GB
single restart file
```

with history output every simulated month:

```
1 year:                288 GB
100 years:            28.8 TB
```

with history output every simulated month and 2-hourly 2D fields:

```
1 year:                392 GB
100 years:            39.2 TB
```

GFDL HIRAM
C720 12.5km; 32 levels; cubed sphere grid.

```
single 3D variable                    0.8 GB
total grid points per 3D variable     0.1 G
single history file                    15 GB
single restart file                   6.5 GB

history output for 1 simulated day (hurricane forecast mode):  25 GB
history output for 1 simulated day (year hindcast mode):       15 GB

Hurricane forecast test (100 runs of 5 days each):             12 TB
1 year hindcast for 2008:                                    5.4 TB
```

```
5 member ensemble hindcast:                                    27 TB
```

GFDL HIRAM
C2000 4.5km; 54 levels; cubed sphere grid

```
single 3D variable                      10 GB
total grid points per 3D variable      1.3 G
single history file                    200 GB
single restart file                     80 GB

History output for 1 simulated day (hurricane forecast mode):  200 GB
Hurricane forecast studies (4 5-day experiments)                  4 TB
```

CSU GCRM 4km horizontal, 100 levels, geodesic grid

```
single 3D variable; cell center   16 GB
single 3D variable; cell edge   50.3 GB
single 3D variable; cell corner 33.6 GB
Number of cells; corners; edges:  40M; 80M; 120M
single history file              571 GB
single restart file              400 GB
```

with history output every simulated month:

```
1 year                            6 TB
100 years                       600 TB
```

with high frequency history output (used for studying fast time scale processes):

```
1 simulated day (every 3 hours) 4.5 TB
1 simulated week (4 hourly)      24 TB
1 simulated month (6 hourly)   68.5 TB
1 simulated year (6 hourly)     822 TB
```

Ocean model

POP 0.1 degree
3600x2400x42 stretched lat-lon grid.

```
single 3D variable     1.45  GB (4 byte reals)
single history file    18.94 GB
single restart file    24.19 GB
```

with history output every simulated month:

```
1 year:      227 GB
100 years:  22.7 TB
```

Sea ice model

CICE 0.1 degree
3600x2400 stretched lat lon grid.

```
single 2D variable            33  MB (4 byte reals)
```

```
single history file          4.32  GB
single restart file          5.045 GB
```

with history output every simulated month:

```
1 year:       51.84 GB
100 years:    5.184 TB
```
